Clean Copy of All Pending Claims

1. (Amended) A body-insertable apparatus comprising:

an excitation source capable of generating radiation;

at least one probe disposed in a path of said radiation, said probe situated to contact an analyte;

a detector for detecting optical properties of said probe, said detector also for converting optical signals representative of the detected optical properties to electrical signals;

and a housing adapted for reaching an area of interest within a body,

wherein said excitation source, said probe, and said detector are disposed in said housing.

2. (Amended) The apparatus of claim 1 wherein said probe binds to an oligonucleotide.

3. (Amended) The apparatus of claim 1 wherein said probe binds to a protein.

4. The apparatus of claim 1 wherein said probe is fluorescently labeled.

5. The apparatus of claim 1 wherein said probe is attached to a substrate.

6. (Amended) The apparatus of claim 1 wherein said probe comprises an array of sub-probes.

7. (Amended) The apparatus of claim 6 wherein said array comprises a readable polydeoxynucleotide array.

8. (Amended) The apparatus of claim 6 wherein said array is disposed in a plurality of chambers within a frame.

9. The apparatus of claim 8 wherein said frame comprises a molded material.

10. The apparatus of claim 8 wherein said frame comprises a foraminous material.

11. (Amended) The apparatus of claim 1 further comprising optics that affects said path of radiation.

12. (Amended) The apparatus of claim 11 wherein said optics comprises a mirror.

13. (Amended) The apparatus of claim 12 wherein said mirror is adjustable.

14. (Amended) The apparatus of claim 1 wherein said body-insertable apparatus is electrically connected to a processing unit.

15. (Amended) The apparatus of claim 1 wherein said body-insertable apparatus is electrically connected to an amplifier.

16. (Amended) The apparatus of claim 1 wherein said body-insertable apparatus is electrically connected to a display.

17. The apparatus of claim 7 wherein said array is positioned adjacent to said detector.

18. The apparatus of claim 17 wherein said detector comprises a spectrometer module.

19. The apparatus of claim 18 wherein said spectrometer module is encapsulated in an at least partly transparent housing.

20. The apparatus of claim 1 wherein said excitation source comprises a light-emitting diode light source.

21 The apparatus of claim 1 wherein said excitation source provides excitation energy wavelengths in a range from about 1100 nm to about 250 nm.

22. The apparatus of claim 1 wherein said detector comprises a photodiode responsive to light emitted by said probe.

23. The apparatus of claim 1 wherein said detector comprises a light wavelength detection system.

24. The apparatus of claim 23 wherein said light wavelength detection system comprises a bandpass filter.

26. (Amended) The apparatus of claim 1 wherein said body-insertable apparatus comprises a catheter.

27. (Amended) The apparatus of claim 1 wherein said body-insertable apparatus defines one or more lumens extending through the length of said body-insertable apparatus.

28. (Amended) The apparatus of claim 27 wherein said lumen delivers a drug, a reagent or a device to or beyond the distal tip of said body-insertable apparatus.

29. The apparatus of claim 27 wherein said lumen provides suction sufficient to draw an analyte into proximity with said excitation source, said probe and said detector such that said analyte can be analyzed.

30. The apparatus of claim 27 wherein said lumen comprises an infusion lumen.

33. (Amended) The apparatus of claim 1 wherein said detector detects light emission at multiple wavelengths.

34. (Amended) The apparatus of claim 31 wherein said detector comprises a photodiode.

44. (New) A method of performing in vivo examination of a mammalian body, said method comprising:

(a) providing a device comprising an excitation source, at least one probe, a detector and a housing, wherein said excitation source, said probe and said detector are disposed in said housing;

(b) inserting said device into said mammalian body until said probe contacts an analyte in an area of interest;

(c) generating radiation from said excitation source such that said probe is in a path of said radiation;

(d) detecting an optical signal representative of an optical property of said probe through said detector; and

(e) converting said optical signal to an electrical signal.

45. (New) The method of claim 44 wherein said analyte comprises an oligonucleotide.

46. (New) The method of claim 44 wherein said analyte comprises a protein.

47. (New) The method of claim 44 wherein said probe is fluorescently labeled.

48. (New) The method of claim 44 wherein said probe is attached to a substrate.

49. (New) The method of claim 44 wherein said probe comprises an array of sub-probes.

50. (New) The method of claim 49 wherein said array comprises a readable polydeoxynucleotide array.

51. (New) The method of claim 49 wherein said array is disposed in a plurality of chambers within a frame.

52. (New) The method of claim 51 wherein said frame comprises a molded material.

53. (New) The method of claim 51 wherein said frame comprises a foraminous material.

54. (New) The method of claim 44 further comprising using optics to affect said path of radiation.

55. (New) The method of claim 54 wherein said step of using optics comprises adjusting a mirror.

56. (New) The method of claim 44 further comprising transmitting and processing said electrical signal.

57. (New) The method of claim 44 further comprising amplifying said electrical signal.

58. (New) The method of claim 44 further comprising displaying said electrical signal.

59. (New) The method of claim 48 further comprising mixing said probe with an ink to form a probe-filled ink and depositing said probe-filled ink upon said substrate.

60. (New) The method of claim 59 further comprising depositing a plurality of probe-filled inks upon said substrate in a specific ink pattern.

61. (New) The method of claim 60 further comprising protecting said ink pattern with a topcoat.

62. (New) The method of claim 61 wherein said topcoat comprises a dissolvable gel.

63. (New) The method of claim 61 wherein said topcoat comprises a polymer material dissolvable only upon application of a solvent.

64. (New) The method of claim 44 wherein said detector comprises a spectrometer module.

65. (New) The method of claim 44 further comprising encapsulating said spectrometer module in an at least partly transparent housing.

66. (New) The method of claim 44 wherein said excitation source comprises a light-emitting diode.

67. (New) The method of claim 44 wherein step (c) comprises generating radiation of wavelengths in a range from about 1100 nm to about 250 nm.

68. (New) The method of claim 44 wherein said detector comprises a photodiode responsive to said optical signal from said probe.

69. (New) The method of claim 44 wherein said detector comprises a light wavelength detection system.

70. (New) The method of claim 69 wherein said light wavelength detection system comprises a bandpass filter.

71. (New) The method of claim 44 wherein said device comprises a catheter.

72. (New) The method of claim 44 wherein said device defines at least one lumen extending through the length of said device.

73. (New) The method of claim 72 further comprising delivering a drug, a reagent or a device through said lumen to or beyond a distal tip of said device to affect said area of interest.

74. (New) The method of claim 72 further comprising using said lumen to provide suction such that said analyte is drawn into contact with said probe.

75. (New) The method of claim 44 further comprising introducing to said area of interest a lysing system to facilitate contact between said analyte and said probe.

76. (New) The method of claim 75 further comprising using ultrasonic energy to rupture a cell membrane at said area of interest.

77. (New) The method of claim 75 further comprising using a pressurization and evacuation system to rupture a cell membrane at said area of interest.

78. (New) The method of claim 75 further comprising using a mechanical force to rupture a cell membrane at said area of interest.

79. (New) The method of claim 78 further comprising using a lysing head driven by a driveshaft to rupture said cell membrane.

80. (New) The method of claim 44 further comprising implanting said device in said mammalian body.

81. (New) The method of claim 44 further comprising anchoring said device in said area of interest through an anchor.

82. (New) The method of claim 81 wherein said anchor comprises a therapeutic tip for administering a therapeutic agent.

83. (New) The method of claim 82 wherein said therapeutic tip is separable from the rest of said device such that said therapeutic tip remains within the area of interest after removal of said device.

84. (New) The method of claim 82 wherein said therapeutic tip is retrievable.

85. (New) The method of claim 84 wherein said therapeutic tip is retrievable through a tether attached to said therapeutic tip.

86. (New) The method of claim 82 further comprising controlling a function of said therapeutic tip from outside said body by transmitting an electrical signal through a tether attached to said therapeutic tip.

87. (New) The method of claim 44 further comprising using a carrying device to deliver said device to the area of interest.

88

~~89~~. (New) The method of claim 87 wherein said carrying device is selected from the group consisting of a hollow needle, a guide wire, a balloon catheter, an ultrasound catheter, an introducer sheath, and a balloon angioplasty catheter.